



SEQUENCE LISTING

RECEIVED

AUG 29 2001

TECH CENTER 1600/2900

<110> Meloen, Robert Hans

Oonk, Hendrica Berendina

<120> An Improved Peptide, Immunogenic Composition and Vaccine or Medical Preparation, a Method to Immunise Animals Against the Hormone LHRH, and Analogs of the LHRH Tandem Repeat Peptide and their Use as Vaccine

<130> 2183-4518US

<140> 09/659,983

<141> 2000-09-12

<150> US 09/274,048

<151> 1999-03-22

<150> US 08/981,557

<151> 1995-06-07

<150> PCT/NL96/00223

<151> 1996-06-06

<150> US 08/447,298

SUS
E2

<151> 1995-06-07

<150> US 08/476,013

<151> 1995-06-07

<160> 13

<170> PatentIn version 3.0

<210> 1

<211> 10

<212> PRT

<213> Sus scrofa

<220>

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<222> (1)..(1)

<223> X=pyroglutamic acid

<220>

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<222> (10)..(10)

<223> X=Gly-NH2

Sub
E2

<400> 1

Xaa His Trp Ser Tyr Gly Leu Arg Pro Xaa
1 5 10

<210> 2

<211> 10

<212> PRT

<213> Homo sapiens

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<222> (1)..(1)

<223> X=pyroglutamic acid

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<222> (10)..(10)

<223> X=Gly-NH2

<400> 2

Xaa His Trp Ser His Gly Trp Tyr Pro Xaa
1 5 10

<210> 3

<211> 20

Sub
E2

<212> PRT

<213> artificial

<220>

<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

<220>

<221> PEPTIDE

<222> (1)..(1)

<223> X=pyroglutamic acid or Gln with attached tail of one or more additional amino acid

<220>

<221> PEPTIDE

<222> (3)..(3)

<223> X=Trp or N(indole)formyl-tryptophan

<220>

<221> SITE

<222> (10)..(11)

<223> there is either a direct bond or a spacer group between Gly at position 10 and Gln at position 11

<220>

Sub
E2
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<222> (13)..(13)

<223> X=Trp or N(indole)formyl-tryptophan

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<222> (20)..(20)

<223> X=Gly-NH₂ or Gly with attached tail of one or more amino acids

<220>

<221> VARIANT

<222> (10)..(19)

<223> variable repeat sequence <10-19

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Xaa His Xaa Ser Tyr Gly Leu Arg Pro Gly Gln His Xaa Ser Tyr Gly
1 5 10 15

Leu Arg Pro Xaa
20

<210> 4

<211> 21

<212> PRT

<213> artificial

Sub
E2

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<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

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<222> (1)..(1)

<223> X=pyroglutamic acid

<220>

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<222> (6)..(6)

<223> X=D-Lys

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<222> (11)..(11)

<223> X=Gly or Gly preceded by a spacer

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<222> (16)..(16)

<223> X=D-Lys

Sub
E2

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<222> (21)..(21)

<223> X=Cys-NH2

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Xaa His Thr Ser Tyr Xaa Leu Arg Pro Gly Xaa His Thr Ser Tyr Xaa
1 5 10 15

Leu Arg Pro Gly Xaa
20

<210> 5

<211> 21

<212> PRT

<213> artificial

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<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

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<222> (1)..(1)

<223> X=pyroglutamic acid

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Sub
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~~<222> (4)..(4)~~

~~<223> X=amino acid substitution~~

~~<220>~~

~~<221> PEPTIDE~~

~~<222> (6)..(6)~~

~~<223> X=D-Lys~~

~~<220>~~

~~<221> PEPTIDE~~

~~<222> (11)..(11)~~

~~<223> X=Gly or Gly preceded by a spacer~~

~~<220>~~

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~~<222> (14)..(14)~~

~~<223> X=amino acid substitution~~

~~<220>~~

~~<221> PEPTIDE~~

~~<222> (16)..(16)~~

~~<223> X=D-Lys~~

Sub
E2
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<222> (21)..(21)

<223> X=Cys-NH₂

<400> 5

Xaa His Thr Xaa Tyr Xaa Leu Ala Pro Gly Xaa His Thr Xaa Tyr Xaa
1 5 10 15

Leu Arg Pro Gly Xaa
20

<210> 6

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GnRH/ LHRH

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<223> X=pyroglutamic acid

Sub
Ed

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<222> (6)..(6)

<223> X=D-Lys

<220>

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<222> (8)..(8)

<223> X=amino acid substitution

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<222> (11)..(11)

<223> X=Gly or Gly preceded by a spacer

<220>

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<222> (16)..(16)

<223> X=D-Lys

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<222> (18)..(18)

Sub E2

<223> X=amino acid substitution

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<222> (21)..(21)

<223> X=Cys-NH₂

<400> 6

Xaa His Thr Ser Tyr Xaa Leu Xaa Pro Gly Xaa His Thr Ser Tyr Xaa
1 5 10 15

Leu Xaa Pro Gly Xaa
20

<210> 7

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<212> PRT

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GnRH/ LHRH

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<223> X=pyroglutamic acid

Sub
E27

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<223> X=D-Lys

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<223> X=amino acid substitution

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<222> (11)..(11)

<223> X=Gly or Gly preceded by a spacer

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<222> (20)..(20)

<223> X=amino acid substitution

<220>

<221> PEPTIDE

Sub E2

<222> (21)..(21)

<223> X=Cys-NH2

<400> 7

Xaa His Thr Ser Tyr Xaa Leu Arg Pro Xaa Xaa His Thr Ser Tyr Xaa
1 5 10 15

Leu Arg Pro Xaa Xaa
20

<210> 8

<211> 42

<212> PRT

<213> artificial

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<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

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<222> (1)..(1)

<223> X=Glu-NH2

<220>

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<222> (6)..(6)

Sub
[12]
<223> X=D-Lys

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<222> (11)..(11)

<223> X=Gly or Gly preceded by a spacer

<220>

<221> PEPTIDE

<222> (16)..(16)

<223> X=D-Lys

<220>

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<222> (22)..(22)

<223> X=Glu-NH₂

<220>

<221> PEPTIDE

<222> (27)..(27)

<223> X=D-Lys

<220>

Sub Ed
<221> PEPTIDE

<222> (32)..(32)

<223> X=Gly or Gly preceded by a spacer

<220>

<221> PEPTIDE

<222> (37)..(37)

<223> X=D-Lys

<220>

<221> SITE

<222> (21)..(42)

<223> dimer formed between Cys 21 and Cys 42

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Xaa His Thr Ser Thr Xaa Leu Arg Pro Gly Xaa His Thr Ser Tyr Xaa
1 5 10 15

Leu Arg Pro Gly Cys Xaa His Thr Ser Tyr Xaa Leu Arg Pro Gly Xaa
20 25 30

His Thr Ser Tyr Xaa Leu Arg Pro Gly Cys
35 40

<210> 9

<211> 21

<212> PRT

Sub
Ea

<213> artificial

<220>

<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

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<222> (1)..(1)

<223> X=pyroglutamic acid

<220>

<221> PEPTIDE

<222> (6)..(6)

<223> X=D-Lys

<220>

<221> PEPTIDE

<222> (11)..(11)

<223> X=Gly or Gly preceded by a spacer

<220>

<221> PEPTIDE

<222> (16)..(16)

SUB
ED

<223> X=D-Lys

<220>

<221> PEPTIDE

<222> (21)..(21)

<223> X=Cys-NH2

<400> 9

Xaa His Thr Ser Tyr Xaa Leu Arg Pro Gly Xaa His Thr Ser Tyr Xaa
1 5 10 15

Leu Ala Pro Gly Xaa
20

<210> 10

<211> 21

<212> PRT

<213> artificial

<220>

<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

<220>

<221> PEPTIDE

<222> (1)..(1)

<223> X=amino acid substitution with acetyl group

SW
62

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<222> (6)..(6)

<223> X=D-Lys

<220>

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<222> (11)..(11)

<223> X=amino acid substitution

<220>

<221> PEPTIDE

<222> (16)..(16)

<223> X=D-Lys

<220>

<221> PEPTIDE

<222> (21)..(21)

<223> X=Cys-NH2

<400> 10

Xaa His Thr Ser Tyr Ser Leu Arg Pro Gly Xaa His Thr Ser Tyr Ser
1 5 10 15

SW
Ea

Leu Arg Pro Gly Xaa
20

<210> 11

<211> 21

<212> PRT

<213> artificial

<220>

<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

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<222> (1)..(1)

<223> X=pyroglutamic acid

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<222> (5)..(5)

<223> X=amino acid substitution

<220>

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<222> (6)..(6)

<223> X=D-Lys



<220>

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<222> (11)..(11)

<223> X=Gly or Gly preceded by a spacer

<220>

<221> PEPTIDE

<222> (15)..(15)

<223> X=amino acid substitution

<220>

<221> PEPTIDE

<222> (16)..(16)

<223> X=D-Lys

<220>

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<222> (21)..(21)

<223> X=Cys-NH₂

<400> 11

Xaa His Thr Ser Xaa Xaa Leu Arg Pro Gly Xaa His Thr Ser Xaa Xaa

SWD
EQ

1 5 10 15

Leu Arg Pro Gly Xaa

20

<210> 12

<211> 21

<212> PRT

<213> artificial

<220>

<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

<220>

<221> PEPTIDE

<222> (1)..(1)

<223> X=pyroglutamic acid

<220>

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<222> (6)..(6)

<223> X=D-Lys

<220>

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<222> (7)..(7)

5MD
E2

<223> X=amino acid substitution

<220>

<221> PEPTIDE

<222> (11)..(11)

<223> X=Gly or Gly preceded by a spacer

<220>

<221> PEPTIDE

<222> (16)..(16)

<223> X=D-Lys

<220>

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<222> (17)..(17)

<223> X=amino acid substitution

<220>

<221> PEPTIDE

<222> (21)..(21)

<223> X=Cys-NH₂

<400> 12

sub
eq

Xaa His Thr Ser Tyr Xaa Xaa Arg Pro Gly Xaa His Thr Ser Tyr Xaa
1 5 10 15

Xaa Arg Pro Gly Xaa
20

<210> 13

<211> 21

<212> PRT

<213> artificial

<220>

<223> A peptide suitable for eliciting an immune response against forms
GnRH/ LHRH

<220>

<221> PEPTIDE

<222> (1)..(1)

<223> X=pyroglutamic acid

<220>

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<222> (6)..(6)

<223> X=D-Lys

<220>

<221> PEPTIDE

AY
Sub
Ed

<222> (9)..(9)

<223> X=amino acid substitution

<220>

<221> PEPTIDE

<222> (11)..(11)

<223> X=Gly or Gly preceded by a spacer

<220>

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<222> (16)..(16)

<223> X=D-Lys

<220>

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<222> (21)..(21)

<223> X=Cys-NH₂

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Xaa His Thr Ser Tyr Xaa Leu Arg Xaa Gly Xaa His Thr Ser Tyr Xaa
1 5 10 15

Leu Arg Xaa Gly Xaa
20